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Topic Significance & Study Purpose/Background/Rationale: The Blood and Marrow Transplant (BMT) patient population is highly susceptible to acquiring a *Clostridium difficile* (c. diff) infection. The prolonged neutropenic status causes c. diff infections to be more severe and longer lasting in this patient population (Rev Inst Med Trop Sao Paulo. 2014 Jul;56(4):325-31). On average, the cost of a Hospital Acquired Infection (HAI) of c. diff is $11,285 per incident (JAMA Intern Med 2013; 173(22)2039-2046). The current practice of sanitizing with bleach wipes with all patients has minimal effect on c. diff rates (Clin Infect Dis. (2000) 31 (4): 995-1000).
Methods, Intervention, & Analysis: Starting November 2013, the University of Minnesota Health Adult BMT unit experienced an increased prevalence of c. diff in the inpatient population. As a result, the unit switched their sanitizing practices to universally sanitizing with a hypochlorite solution. Previously, only rooms of patients testing positive for a c. diff infection were sanitized with a hypochlorite solution. This switch did not result in a significant drop in c. diff rates per one thousand patient days. In February, a silver based solution (Steriplex SD© & Steriplex 360©) was adopted unit wide to replace the hypochlorite solution. The use of all other sanitizing products was discontinued. C. diff rates were measured by patient lab reports.
Findings & Interpretation: Findings demonstrated that the switch to silver based wipes from bleach based wipes reduced c. diff infection rates among the BMT population, as demonstrated by the drop in the rate of active c. diff from 5.5/1000 patient days to 0/1000 patient days. The current hospital practice to reduce the transmission of active c. diff infection is the use of bleach based wipes. Implications of the study include: ongoing advocacy of improved infection prevention measures in the care of BMT patients, further conversations with the infection control department about c. diff infection control practices in the BMT population, as well as consideration for switching disinfection products hospital wide.
Discussion & Implications: Based on these findings, we have switched solely to sanitizing with the silver-based solution. We recommend the use of this solution to the outpatient BMT clinic. This practice would be beneficial in protecting all patient populations including those with hematological/oncological conditions.

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Pre-Transplant Caregiver Education for Out-Patient Multiple Myeloma Hematopoietic Transplant Admission in New Day Hospital: Caregiver Role and Contract in Outpatient Transplant Patient Care

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Topic Significance & Study Purpose/Background/Rationale: Hematopoietic transplantation is a complex procedure. Excellent education and discussion with patients and family is imperative because of increasingly complicated clinical and psychosocial management of their care. In the early steps of pre-transplant preparation, before admission, it is important to initiate discussion with the patient and family about discharge teaching. This was important when moving autologous transplant in outpatient day hospital.

To discuss process of patient/caregiver evaluation and caregiver support during patient day hospital visits: 1) the implementation of Pre transplant Caregiver education; 2) identify specific content areas for pre-transplant teaching; 3) additional methods of teaching involving both patient and caregiver.
Methods, Intervention, & Analysis: A group was formed to develop Day Hospital HCT Discharge Teaching to: 1) improve patient/family caregiver education about outpatient HCT multiple myeloma in the day hospital; 2) create content and develop methods for patient & caregiver education in preparation for admission to the Day Hospital and 3) develop and adminster satisfaction survey of new OPD transplant process.
Findings & Interpretation: A task force of staff nurses, nurse practitioner, nurse educators, nursing leaders, case managers, and clinical social worker was assembled to develop caregiver education which included the caregiver attending a group class facilitated by a nurse coordinator; caregiver contract; and complete symptom management forms. In addition, nurse coordinators and day hospital staff review specific content for HCT patient care, common medications and side effects, expected transplant related symptoms, discharge issues which include VAD care, infection precautions, dietary restrictions, home preparation, clinic routine, and long term survivorship topics with the caregiver. With the pre-transplant education, patient and caregiver satisfaction was high at day of transplant (caregiver 90.3%, patient 91.8%) and at day of discharge (patient only 90%); with these efforts, it achieved a decrease in the HCT number of length of stay days from 21 days to 14 days. Ninety two percent of patients (n=12) received their stem cells in an outpatient setting.
Discussion & Implications: There was improved cooperation between physician/mid-level/nursing teams resulting in timely and efficient care and cooperation between outpatient and inpatient; patient obtained prescribed medication 100% and patient expressed quality of life is better maintained. The institutional commitment to the program has promoted seamless care.

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Nurse-Initiated Protocol for Central Venous Catheter (CVC) Selection for Blood and Marrow Transplant (BMT) Recipients

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Topic Significance & Study Purpose/Background/Rationale: Advances in the design of CVCs has led to a variety of features that increase the functionality of CVCs used in the care of BMT patients. Examples of these features include: power injection of contrast media, central venous pressure (CVP) monitoring, apheresis procedures including stem cell collection, plasma exchange and extracorporeal photopheresis. However, matching the right CVC with the individual treatment requirements for BMT patients can be a challenge. For example, CVC's composed of polyurethane are not recommended for infusion containing high concentrations of alcohol (e.g., undiluted etoposide). At our institution, an opportunity for improvement was identified due to an increase in occurrences of inappropriate CVC selection. The decision to develop a nurse-initiated protocol was based on the knowledge of infusion therapy.

Methods, Intervention, & Analysis: In order to optimize the best outcome of selection and placement of the right CVC for BMT recipients, a nurse-initiated protocol for CVC selection was developed. CVC options and patient risk factors that nurses utilize in the care and maintenance of CVCs. The CVC selection protocol is based on the specific requirements of the patient's road map for transplant. Application of manufacturer's guidelines for each device and collaboration by a multidisciplinary team were used to identify the best CVC choice for the patient with reference to the patient's planned therapies. For example:

Autologous BMT Patient Criteria	CVC Type
Standard mobilization and collection	High flow temporary CVC for mobilization/ collection
No undiluted etoposide	Double lumen power injectable peripherally inserted central catheter (PICC)

To implement the protocol, the BMT RN Coordinator starts with a review of the patient's road map for transplant in collaboration with the BMT pharmacist. After the review the RN selects the appropriate CVC based on the protocol table that pairs the correct CVC with patient criteria. Once the selection is made the BMT RN Coordinator enters the order for the CVC type into the electronic medical record. The order is then accessed by the surgeon, interventional radiologist and/or nurse placing the CVC.

Findings & Interpretation: N/A

Discussion & Implications: The goal of this quality improvement project is to eliminate occurrences of inappropriate CVC placement in autologous and allogeneic transplant recipients.

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Follow-up of Related Stem Cell Donors One Week Post Donation

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Topic Significance & Study Purpose/Background/Rationale: It has been observed (Blood, 5/01; Blood 10/2012) that unrelated bone marrow and peripheral blood stem cell donors experience similar levels of mild/moderate discomfort post donation with bone marrow donors having a longer period of discomfort post donation. FACT standards now recommend long-term follow-up of donors. This center cares for approximately 70 related donors a year. Previous to this project, nurses assessed the donors (both apheresis and marrow) the day post donation, and instructed them to call if they had questions thereafter. To improve follow up, nurses caring for the donors initiated a trial to conduct a telephone interview assessment of all donors a week after their final Clinic visit.

Methods, Intervention, & Analysis: In October 2013 a pilot was undertaken to actively assess related donors post donation. A questionnaire was vetted and approved to be used in telephone follow up by the Clinic RN who had cared for the donor. All donors were called 1 week following donation and monitored for symptoms of discomfort. If any symptoms were reported, follow up continued until resolved. This pilot was also used as a quality audit tool, asking the donors if there was anything we could have told them that would have been helpful, and if there was anything they thought we could improve upon.

Findings & Interpretation and Discussion & Implications: At the time of this submission, we have made 35 follow up calls; of those 24 had no symptoms, 8 reported symptoms of discomfort and 3 were unable to be contacted. Over $^{1}/_{4}$ of the patients had mild to moderate discomfort at one week post donation. Follow up contact with donors provides an ongoing link with the clinical team and yields useful information for addressing the needs of donors.

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Optimizing Transplant Ambulatory Care Utilizing Multidisciplinary Rounds

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Topic Significance & Study Purpose/Background/Rationale: Multidisciplinary rounds (MR) are a standard model used in hospitals. Our Transplant Center performs approximately 500 Hematopoietic Cell Transplants (HCT) annually. Care of the HCT patients has moved from the inpatient setting to the ambulatory clinic. In the clinic, complex care is managed for HCT patients coordinating clinical care, nutritional needs, medication management, psych-social issues and scheduling. Labs, radiology, medications, pathology, and symptom management require close observation and review at 24 hour increments. This complex patient care management is best implemented with the utilization of MR.

Methods, Intervention, & Analysis: Each patient is followed by a team comprised of an Attending MD, Primary Care Provider, RN, Pharmacist, Registered Dietician, Social Worker and Team Coordinator. The team meets daily for 30 minutes to review current status of all patients, each discipline providing input and making suggestions for care adjustments needed. There is full team discussion of any issues—medical, nursing, social, financial, compliance—that impact care on any level. Anticipated workups that need orders, upcoming procedures that require teaching such as chemotherapy or dressing changes, as well as any recent pertinent results are also briefly discussed so orders and appointments can be obtained in a timely fashion.

Findings & Interpretation: Daily MR in the outpatient HCT clinic has been found to provide an opportunity to make adjustments to the patient's care and allow for more HCT care to be performed in the outpatient setting as evidenced the ability to perform HCT sometimes solely in the outpatient setting, with no admission to the hospital. Satisfaction with this care is evidenced by Patient Satisfaction scores.

Discussion & Implications: The inpatient model of daily MR can be replicated in the outpatient HCT setting. A Team RN acting as the care coordinator facilitates the outpatient care and serves as the patient voice. This can safely increase the time a patient is able to spend outside the hospital which decreases costs and increases quality of life.